MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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Consultation paper

Onshore Fuel Stockholding

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The Ministry of Business, Innovation and Employment (MBIE) seeks written submissions on the issues raised in this document by 5pm on 28 February 2022.

Your submission may respond to any or all of these issues. Where possible, please include evidence to support your views, for example references to independent research, facts and figures, or relevant examples.

Please include your contact details and the name of your organisation in the cover letter or e-mail accompanying your submission.

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Summary of proposals

We propose requiring a minimum onshore fuel stockholding level similar to that proposed in Australia, namely 28 days of cover for diesel and its biofuels equivalent, and 24 days of cover for other liquid transport fuels (namely petrol and jet fuel). The days of cover is calculated by dividing the amount of gross stock by the average daily consumption of the fuel in the previous two calendar years. The minimum onshore fuel stockholding requirement would be reviewed after five years of implementation.

We seek your feedback on the following options for achieving the minimum onshore fuels:

- Government procuring stock or tickets for onshore fuel stocks, which gives the Government the right to purchase the stocks during emergencies
- requiring fuel wholesale suppliers to meet a minimum onshore fuel stockholding level
- establishing a stockholding agency for managing the minimum stockholding obligations of fuel industry participants and the Government.

Minimum onshore fuel stockholding obligations on fuel wholesale suppliers

We propose that fuel wholesale suppliers, as defined in the Fuel Industry Act 2020, would have to comply with the minimum onshore fuel stockholding obligations, including:

- holding onshore fuel stocks at or above the minimum level set by the Government, based on the market share of the fuel wholesale supplier concerned and the desired number of days of cover for meeting New Zealand's fuel demand
- making financial contributions to stockholding agency (if established) at a level set by the Government, based on the market share of the fuel wholesale supplier concerned and the funding required for the operation of the agency
- fulfilling information disclosure requirements, such as filing monthly returns on fuel stocks.

Fuel wholesale suppliers would be able to trade with others to meet the minimum fuel stockholding obligations through entitlement agreements between them.

Proposed penalties relating to the proposed minimum onshore fuel stockholding obligations include:

- a maximum penalty of $1.5 million for failure to meet the minimum stockholding level
- anyone knowingly providing information that is false or incomplete to satisfy compliance with the minimum fuel stockholding obligations could attract fines of up to $100,000 for a person and up to $500,000 for an organisation.

Stockholding agency

If the Government runs or co-funds the stockholding agency, we envisage that the agency would:

- manage the compliance, enforcement and monitoring activities associated with the minimum stockholding obligations on the fuel wholesale suppliers

- take over the responsibility for managing compliance with New Zealand's International Energy Agreement obligations, including procurement of oil tickets
- take on a role in managing responses to fuel disruptions and coordinating the relevant contingency planning and emergency exercises
- develop or manage other fuel resilience mitigation measures.

Subject to funding availability, the stockholding agency could also potentially invest in fuel storage and distribution facilities.

We also propose changes to the formula for calculating the petroleum and engine fuel monitoring levy, which would allow the levy rate to be set in a more transparent way and align better with the projected cost of maintaining New Zealand's fuel reserve commitments.

Contents

What is fuel security and why are we considering it?

Purpose

This discussion document seeks views on whether New Zealand should consider changes to onshore fuel stockholding levels in order to increase our fuel security in the event of a fuel disruption and, if so, how best to do this.

Context

Fuel supply security or resilience is the ability to withstand a fuel supply disruption, limit its consequences, and recover quickly. The fuel supply industry is good at managing most logistical challenges that periodically occur in the fuel supply chain, such as a delayed fuel import shipment due to bad weather or an unplanned outage of a fuel pipeline or oil refinery. Most small-scale disruptions are managed without fuel consumers noticing any changes.

This paper is about resilience to more significant disruptions that could, without adequate mitigation, result in a prolonged national fuel shortage that would warrant rationing of available fuel to high priority uses (such as emergency services and food distribution). The primary disruption scenario we have in mind is an event that prevents or significantly delays the delivery of imported fuel into New Zealand for a sustained period.

Fuel supply security is important because our economic and social wellbeing is critically dependent on engine fuels: petrol for our cars (including police cars), diesel for our trucks, ambulances and farm machinery, jet fuel for our planes, and other fuels for our ferries and fishing fleets. The Government therefore takes a close interest in fuel security and periodically reviews the relevant policy settings. Reviewing fuel security is particularly relevant when there is a significant change in the fuel supply chain, as is currently the case following Refining NZ's announcement it will soon cease refining operations at the Marsden Point oil refinery.

Domestic oil refinery is scheduled to close

Refining NZ will close its Marsden Point oil refinery and become a fuel import terminal by April 2022. Refining NZ will be renamed 'Channel Infrastructure', and will utilise existing infrastructure at Marsden Point, including the Refinery to Auckland Pipeline (RAP), to receive, store, test and distribute transport fuels imported by its customers, primarily to the Northland and Auckland markets.

Once the refinery is closed, New Zealand will fully rely on imports of refined fuel products for the foreseeable future.[1] In this paper we are considering fuel security over the next two decades, or the period until about 2040.

In the years immediately before 2020, Refining NZ supplied about 65 to 70 per cent of New Zealand's total demand for refined fuels, and 100 per cent of its jet fuel. The balance was imported mainly from refineries in Singapore and South Korea.

Given the significance of this change to our fuel supply chain, the Government is considering the implications for fuel supply security, and this consultation will inform any decisions the Government may take as a result.

There are also other factors that make it timely to review our fuel security. Since the start of the Covid-19 pandemic, New Zealand, like other countries, has had first-hand experience of international supply chain fragility – including for medicines and other goods for which global supply chains were previously considered robust. While fuel supply has not been at risk to date during the pandemic, it is prudent to consider how resilient we are to some hard-to-predict events, whether extreme weather, a global pandemic, or geopolitical conflicts that could disrupt fuel supplies.

Fuel supply risks

An extended 'closed border' event would have severe impacts

MBIE commissioned a report on fuel supply security in late 2020, updating previous studies and focusing on the implications of the planned refinery closure. This discussion paper draws on the evidence and recommendations in that report. [2]

Closure of the refinery is not expected have a major impact on fuel security under most fuel disruption scenarios. Indeed, industry and independent expert advice is that a 100 per cent fuel import model will be more resilient to domestic disruption scenarios than having a domestic refinery, because there will no longer be a 'single point of failure risk' associated with refining, and because import shipments of refined fuels provide more flexibility to respond to local disruptions (shipments can be redirected to ports where they will be most useful for fuel distribution by road).

However, the loss of domestic refining could have more adverse outcomes if New Zealand was unable to import refined fuels for an extended period. A disruption of this kind is considered unlikely in the next two decades but cannot be discounted. An extended 'closed border' event would have a severe impact, whether or not New Zealand has a domestic refinery, but the impact could potentially be worse without a refinery. Most fuel use would be severely constrained and any fuel stocks would likely be prioritised for the maintenance of critical functions, such as food distribution and

[1] It is possible New Zealand will have domestic biofuel production in the future, but the timing is uncertain.
[2] Hale and Twomey, *Fuel Security and Fuel Stockholding Costs and Benefits 2020*, 16 December 2020 – available at: https://www.mbie.govt.nz/dmsdocument/15257-fuel-security-and-fuel-stockholding-costs-and-benefits-2020

emergency services. Recent experience with pandemic response measures in 2020 demonstrated that fuel demand can be reduced significantly through working from home and limiting many normal activities. During the early weeks of Covid-19 alert level 4 in April 2020, retail sales of petrol and diesel dropped below 25 per cent of normal levels. Jet fuel demand dropped to a similar level. Diesel sold at truck stops, however, dropped to a little below 50 per cent of normal demand. Some of that residual diesel fuelled the production and distribution of food and other essentials, as well primary industries and other export sectors that continued to operate.

The pandemic response experience illustrates the potential impact of a significant fuel import disruption, and the challenge posed by rationing available fuel to get through it. If onshore diesel stocks at the onset of a long-lasting disruption amounted to 20 days of normal demand, and if they were very carefully rationed to meet just one third of normal demand (to enable food distribution and other essential services), those stocks would be substantially depleted in about two months.

A less severe fuel import disruption (e.g. loss of 50 per cent of fuel imports for one month) is more credible than a very long duration disruption to all fuel imports. This scenario has been considered in light of the refinery closure and assessed to have a relatively minor impact.[3] For example, if 50 per cent of fuel imports come from North Asia in normal circumstances and supply from that region was entirely disrupted, fuel prices would be expected to peak sharply for a few days and there could be localised service station out-of-stock events. This estimated impact is contingent on fuel companies holding stocks at a level of about 20 days of consumption (which is broadly similar to the current commercial stock level). Longer or more severe fuel import disruptions would have a more severe impact on fuel users.

As noted, the Government has previously considered various domestic fuel disruption scenarios, such as short or long term outages of the Wiri terminal, the fuel pipeline that supplies the Wiri terminal from Marsden Point, and other port terminals including at Tauranga, Wellington and Lyttelton. The impacts of these disruption scenarios and options to mitigate them were assessed in 2012 and 2017, and the results of those assessments can be found in the published reports available on MBIE's website.[4]

Previous risk assessments concluded that the benefits of additional fuel stockholding to mitigate the impact of domestic disruptions would not exceed the costs on an expected value basis, taking into account the low likelihood of disruptions and their estimated economic costs. Also, most domestic fuel supply disruptions (e.g. terminal outage, pipeline outage, or road closure) affect the distribution of fuel into or within a particular place. Holding reserve fuel stock is useful only if it is held in the place affected by the disruption. For example, reserve stock of jet fuel held at Auckland Airport would mitigate the impacts of a Wiri terminal or pipeline outage, but jet fuel stocks held anywhere else would offer little or no mitigation against that disruption scenario if jet fuel is not in short supply anywhere else.

[3] Hale & Twomey (2020)

[4] NZIER, 2012, New Zealand Oil Security Assessment Update; Hale & Twomey, 2017, New Zealand Petroleum Supply Security 2017 Update

This paper, therefore, does not discuss the full range of fuel supply disruptions that might affect fuel consumers, and does not consider the benefits of onshore stockholding to mitigate impacts of domestic fuel disruptions. Neither does it discuss global fuel disruption scenarios whose main impact is to cause a spike in global fuel prices. Onshore fuel stockholding provides no benefit relative to offshore stockholding as a means of softening global fuel prices.

This paper focuses on fuel supply disruptions affecting the physical delivery of fuel into New Zealand (with or without an associated impact on global fuel prices). Onshore stockholding can mitigate the impact of fuel import disruptions, and in general the higher the level of stockholding the greater the benefit in mitigating a long-lasting disruption. However, while the costs of additional stockholding are quantifiable, the benefits are somewhat harder to quantify.

We have not presented an expected value assessment of the benefits of onshore fuel stockholding, noting that the probability of a sustained fuel import disruption, while low, is very hard to quantify. The consequence of a sustained import disruption is also difficult to quantify. Suffice to say, a long-term shortage of fuel would impose considerable economic and social hardship. Whether to hold additional onshore fuel stocks, or how much to hold, is therefore a matter of judgement that depends on willingness to accept such risk or to insure against it.

Uptakes of EVs and biofuels will not affect supply security in the near term

The uptake of electric vehicles (EVs) has been growing significantly in recent years, and the Government's Clean Car Discount has provided financial incentives for car buyers to purchase EVs. Nevertheless, EVs are not expected to achieve purchase price parity with conventional vehicles until the late 2020s, and there are still many internal combustion engine (ICE) vehicles entering and remaining in the fleet. For new ICE vehicles purchased in 2020, it will not be until 2040 that many of them will be replaced with EVs.

Biofuels are seen as a transition fuel to help decarbonise the light vehicle fleet while light ICE vehicles are gradually replaced with EVs. There are also opportunities for biofuels to be used in the heavy vehicle fleet, shipping and aviation. In particular, sustainable aviation fuels (i.e. biofuels for aviation) are considered to be the only viable option for significantly reducing emissions from long-haul flights.

At present, in New Zealand, the uptake of biofuels is negligible, and only small amounts of conventional biofuels, namely ethanol and biodiesel, are produced. A sustainable biofuels mandate is expected to be implemented in 2023, which will result in demand for biofuels to increase significantly. It is likely that biofuels will be imported until domestic biofuels production capacity is developed, therefore biofuels will also be at risk of a sustained import disruption. Furthermore, global trade in advanced biofuels has yet to mature, so global biofuels supply chains are considerably less resilient than fossil fuel supply chains for the foreseeable future.

Despite the expected rise in EVs and biofuels, a significant proportion of the transport fuels will still be fossil fuels in the period to 2040. Security of fossil fuels will therefore remain important to New Zealand.

Coastal tankers may no longer be operated for fuel distribution between ports

Before 2020, the Marsden Point refinery supplied about two-thirds of New Zealand's fuel demand. About 40 per cent of the fuel products of the Marsden Point Refinery was shipped by coastal tankers to 10 ports around New Zealand for distribution to the regions outside of Auckland and Northland.

If the coastal tankers are no longer operated after the refinery closes, they will not be available for shifting fuels between regional ports in New Zealand. This could potentially affect how quickly fuel companies can respond to localised fuel disruptions in New Zealand, as there are currently limitations on the use of foreign vessels (including international fuel tankers) to carry coastal cargo from one New Zealand port to another. Under section 198 of the Maritime Transport Act, such use is prohibited, but the Minister of Transport can grant an exemption on a case-by-case basis.

On the other hand, if coastal tankers are no longer operated, and current port tankage is insufficient, new facilities to store fuels may be required to be built at regional ports. Should there be more new storage facilities in regional ports, the regions' resilience to disasters would be improved.

In general, there may be net benefits in holding reserve fuel stocks in places that are most vulnerable to a fuel distribution disruption (such as the aforementioned terminal or pipeline outage affecting delivery of jet fuel to Auckland Airport, or extended road closures cutting off the South Island's West Coast following an Alpine Fault earthquake).

Consultation questions

- Do you agree with the description above of fuel supply disruption risks? What other disruption scenarios or types of risk should be considered?
- Do you agree with the fuel security assessments above (and in the 2020 Hale & Twomey report), including the implications of the Marsden Point Refinery's closure? If not, why not?
- Do you consider that regional ports other than Northport at Marsden Point have sufficient infrastructure to maintain a satisfactory level of fuel supply resilience? If not, which fuels may need better storage and distribution facilities at those regional ports and why?

Background on IEA membership and 90-day obligation

As a member of the International Energy Agency (IEA), New Zealand must hold oil or fuel stocks equivalent to at least 90 days of net oil and fuel imports (i.e. demand net of any oil production) of the previous calendar year. For countries that are net importers, such as New Zealand, this IEA obligation usually requires maintaining reserve stocks, i.e. stocks over and above those normally held by the fuel industry for normal commercial operations.

Reserve stocks among IEA member countries are typically maintained through direct government procurement, procurement by a dedicated stockholding agency, a minimum stockholding obligation on fuel companies, or a combination of these measures.

New Zealand currently does not place any minimum stockholding obligation on fuel companies. In other words, fuel industry participants here determine their fuel stocks based on their own commercial decisions.

To meet the IEA 90-day requirement, the New Zealand Government currently makes up the difference between commercial stock levels and the IEA 90-day requirement by purchasing reserve oil stock 'tickets', which allow the Government the right to purchase oil and fuel stocks at market prices in the event of an IEA-declared oil supply emergency. The stocks covered by the oil tickets New Zealand purchases are currently held offshore, because fuel industry players in New Zealand have not tendered to hold onshore reserve stocks.

This paper does not propose any change to New Zealand's compliance with the IEA obligation to hold stocks equivalent to at least 90 days of net imports. It does, however, consider whether, or how much, stock to hold onshore versus offshore.

The cost of the oil tickets is currently recovered from the Petroleum and Engine Fuel Monitoring Levy. Fuel importers pay the levy and pass on some if not all cost to fuel consumers. More discussion on this levy will be covered in the section, *Amending levy to reflect oil ticket costs better and to support onshore stockholding*.

Consultation question

- Should New Zealand hold fuel stock equivalent to more than 90 days of net fuel import demand (i.e more than the minimum level required by IEA membership)? If so, how much more and why?

Objectives and evaluation criteria

This paper examines the pros and cons of various options to hold onshore fuel stocks to ensure that New Zealand's fuel supply will remain secure and resilient during the next two decades. The options discussed in this paper focus on the level of onshore fuel stocks and how to achieve the target level, but this paper does not discuss how to incentivise fuel stockholding at specific locations in New Zealand. Nevertheless, the implementation of any decision by Government to increase onshore fuel stockholding could enable some consideration of fuel stock location in light of fuel distribution risks.

This paper does not discuss options that aim to retain or build refining capacity[5]. The Government has other policy measures in place or under development to reduce dependence on imported fuels,

[5] The Government has considered the case for supporting the continuation of refining operations at Marsden Point, and decided no action is warranted. A copy of the Cabinet submission and minute can be found on the web pages, ***https://www.mbie.govt.nz/dmsdocument/17733-fuel-supply-resilience-without-a-domestic-oil-refinery-proactiverelease-pdf*** and ***https://www.mbie.govt.nz/dmsdocument/17736-fuel-supply-resilience-without-a-domestic-oil-refinery-minute-of-decision-proactiverelease-pdf***.

increase fuel diversity (hydrogen, natural gas and electric vehicles), and reduce transport demand. Those policy measures do not avoid the need for adequate resilience to a sudden fuel supply chain disruption in the decades ahead.

The following criteria are applied to assessing the options considered:

a. Fuel security/resilience —fuel security/resilience in New Zealand will be maintained or improved, including minimising the economic and social impact of fuel supply disruption.

b. Cost — to Government and businesses of building and maintaining fuel storage and holding reserve fuel inventories.

c. Administrative efficiency (when considering how to meet the preferred stockholding level) — in terms of monitoring, enforcement and compliance activities by government.

Stockholding is not expected to have any impact on greenhouse gas emissions, so the assessment does not consider emissions under each option.

Consultation question

- Are these the right evaluation criteria? What other criteria should be considered?

What level of onshore stocks should be held?

Status quo

Closure of the refinery is expected to result in a significant reduction in commercial stocks held in New Zealand, comprising the crude oil and intermediate product currently held as part of refinery operation. In total, onshore oil and fuel stocks could decrease by more than 30 per cent from about 1,070 kilo-tonnes (kt) to about 730 kt. Stocks of crude oil and intermediate products will no longer be held in New Zealand, while the loss of these stocks is expected to be partly offset by a small increase in stocks of finished fuel products.

Table 1 Estimated average days of cover before and after refinery's closure (in terms of the amount of onshore fuel stocks available for meeting New Zealand's daily fuel demand), excluding crude oil and intermediate products[6]

Fuel type	Pre-closure days of cover	Post-closure days of cover
Petrol	26	28
Diesel	20	21
Jet A1	17	24
All white fuel products[7]	**22[8]**	**24[9]**

Source: Hale and Twomey (2020)

Under the status quo, New Zealand will need to procure more oil tickets to remain compliant with the IEA obligation. If the additional reserve stocks are procured overseas, which is generally considered the least cost way to meet the IEA obligation, the additional oil ticket cost could be up to about $13 million per annum. This additional cost will be recovered through the fuel levy (discussed below).

Additional reserve stocks held offshore will not improve our ability to mitigate a fuel supply disruption resulting from sudden loss of bulk storage infrastructure in New Zealand (e.g. due to natural disaster) or a sudden constraint on fuel imports.

[6] These estimates are derived from fuel stock data and statistics on fuel consumption for 2019. The estimates were calculated by dividing the gross stock level by the daily consumption of the fuel concerned. Gross stock includes the bottom portion of the stock in tank not available in normal operation, while net stock does not.
[7] White product inventory is the sum of petrol, jet and diesel.
[8] The days of cover will be 28 days if it is expressed in terms of the amount of stocks available for meeting New Zealand's net oil/fuel imports.
[9] The days of cover will be 31 days if it is expressed in terms of the amount of stocks available for meeting New Zealand's net oil/fuel imports.

Onshore reserve fuel stocks (over and above normal commercial stocks) can improve fuel supply resilience, as more stocks will be readily available to respond to fuel disruptions, including interruptions in international shipments. The main advantages of onshore reserve stocks over offshore stocks are that there is a time lag in transporting overseas stocks to New Zealand (roughly four to eight weeks if coming from Europe), and overseas stocks cannot be delivered to New Zealand during a 'closed border' event which severely affects international shipping routes.

If onshore reserve stocks are held, the case for holding diesel may be stronger than other fuels. Among the major transport fuels — petrol, diesel and jet fuel — diesel is the most important for critical services including distribution of food and medicines, fire and ambulance services, and back-up electricity generators. The Australian Government's proposal to increase diesel stockholding by 40 per cent reflects the importance it gives diesel compared to other fuels.

Many other countries, particularly members of the IEA and members of the European Union, maintain government-owned stocks or place obligations on fuel industry participants to hold minimum levels of stocks. Australia is currently implementing a minimum stockholding obligation on industry equivalent to around 24 days for petrol and jet fuel, and about 28 days for diesel. European Union member countries hold stocks equivalent to at least 60 days of consumption. Some countries hold even more; Japan, for example, currently holds about 145 days of consumption. New Zealand is something of an outlier among comparable countries in not holding onshore reserve fuel stocks. [10]Stockholding policies of other countries are summarised in Appendix 1.

On balance, given the enormous consequences of a scenario where fuel import supply chain is disrupted for an extended period, there is a case for New Zealand to introduce a minimum stockholding level that would result in only modest investments in domestic fuel storage.

In the next section we set out indicative options for the level of onshore fuel stockholding. This is not an exhaustive list, but it distinguishes between lower and higher stockholding levels, corresponding to lower and higher levels of insurance against the impacts of significant fuel supply disruptions.

Options

We propose a minimum stockholding level similar to that proposed in Australia, with a review after five years. This option represents a higher level of fuel security than the status quo at modest cost. A review of stockholding levels, undertaken after five years, would be informed by knowledge about the actual costs of additional stockholding, and could provide an opportunity to re-assess the costs and benefits of further increases, if desired.

Indicative options for minimum onshore stockholding levels are summarised in the table below. The levels are expressed in terms of minimum days of cover (gross stock) for meeting the average daily fuel consumption. For simplicity, we assume the minimum commercial stockholding level will be

[10] We note that New Zealand is a small open economy dependent on global trade and, unlike many other countries, has not suffered significant trade restrictions due to conflict or natural disaster.

about 20 days of consumption for all fuels after the refinery closes. In practice, minimum stock levels are less than average stock levels during a period, and vary by fuel grade.

Table 2: Indicative options for onshore stockholding level

Indicative option	Level of minimum onshore stockholding	Equivalent level of onshore reserve stocks (that are held in addition to commercial stocks)
0 Status quo	• No minimum fuel stockholding obligation. • Fuel wholesale suppliers determine commercial stock levels (approximately 20 days of cover).	None
1 Minimum fuel stockholding level similar to the current level	• 20 days of cover for all transport fuels (namely petrol, diesel, jet fuel and their biofuels equivalent).	None, unless commercial stocks decline over time
2 Minimum stockholding level similar to proposed Australian level[11]	• 28 days of cover for diesel and its biofuels equivalent. • 24 days of cover for other transport fuels.	8 days of reserve cover for diesel 4 days of reserve cover for other transport fuels
3 Minimum stockholding level equivalent to double the current level	• 40 days of cover for transport fuels in total (potentially higher cover for diesel and lower for other fuels)	20 days of reserve cover in total
4 High minimum stockholding level for all transport fuels (similar to European Union member country level)	• 60 days of cover for transport fuels in total (potentially higher cover for diesel and lower for other fuels)	40 days of reserve cover in total

Note: we propose days of cover be defined as gross stock divided by average consumption in the previous two calendar years.

[11] In Australia, there are still two operating oil refineries, which supply about 20 per cent of the Australian fuel market.

Assessment of options

If New Zealand wishes to increase fuel supply resilience, increasing the onshore stockholding level beyond the status quo level would be desirable. It is difficult to quantify the benefit of onshore reserve fuel stocks, however, as the likelihood and consequences of severe fuel disruptions are uncertain. There is no formula describing the likelihood of a future event in which New Zealand's IEA treaty partners would be unwilling or unable to assist in a fuel import emergency. Also, while the consequence of fully depleting all domestic fuel stocks would be severe (picture empty supermarket shelves), it is difficult to assess those consequences in terms of a financial cost-benefit analysis. The challenges in assessing the costs and benefits of fuel security measures are discussed more fully in a report commissioned by MBIE in 2019.[12]

Holding onshore reserve fuel stocks requires investments in domestic fuel storage, and the cost of holding onshore reserve fuel stocks are estimated to be substantially higher than the cost of oil tickets for overseas stocks. The cost of oil tickets for overseas stocks is well below $50/m^3/year, while estimates of the cost of leasing existing storage tanks (including the cost of fuel stock) are in the range of $110-220/m^3/year, and the estimated cost of building and maintaining new storage tanks close to or within existing fuel terminals (including the cost of fuel stock) is in the range of $130-250/m^3/year.[13] To put it in context, a major disruption resulting in some fuel shortage for up to 6 weeks (before supply can be restored by new imports) could have a cost in the order of more than $2 billion or 0.8 per cent of GDP.[14]

Generally, there are diminishing returns for increased volumes of onshore reserve stocks, and it is challenging to determine an 'optimal' level of storage, as the mitigating effects of onshore reserve stocks depends on the outage scenario.[15] Onshore reserve stocks provide a much greater positive benefit under the severe outage scenarios. This reflects that households and industries have some capacity to cope with minor fuel shortages through behavioural change and adaptation temporarily. Should shortages become severe and long, the inherent coping mechanisms would be exhausted and impacts would become significant (e.g. food distribution could be severely constrained).

Our assessment of the options is summarised below.

[12] Market Economics (2019), *Economics of Fuel Supply Disruptions and Mitigations*. ***https://www.mbie.govt.nz/assets/economics-of-fuel-supply-disruptions-and-mitigations.pdf***

[13] Hale and Twomey (2020), Fuel Security and Fuel Stockholding Costs and Benefits 2020. ***https://www.mbie.govt.nz/dmsdocument/15257-fuel-security-and-fuel-stockholding-costs-and-benefits-2020***

[14] ***https://www.mbie.govt.nz/assets/economics-of-fuel-supply-disruptions-and-mitigations.pdf***

[15] Market Economics (2019), *Economics of Fuel Supply Disruptions and Mitigations*. ***https://www.mbie.govt.nz/assets/economics-of-fuel-supply-disruptions-and-mitigations.pdf***

Table 3: Summary of assessment of options for minimum onshore stockholding level

Criteria	Option 1 (Minimum at current level)	Option 2 (Australian level)	Option 3 (Double current level)	Option 4 (European level)
Fuel security/resilience • How long, assuming 50% rationing, before diesel stocks are depleted, if no imports?	0 • 42 days	+ • 56 days	++ • 80 days	++ • 120 days
Cost • Additional onshore fuel storage costs	0 • insignificant	- • about $22 million a year	-- • about $80 million a year	--- • about $168 million a year
Overall assessment	0	+ if fuel security/resilience is given more weight.	+ if fuel security/resilience is given more weight.	-

Note: ++ denotes much better than the status quo, + better than the status quo, 0 similar to the status quo, -worse than the status quo, -- much worse than the status quo, and --- worst.

Option 1, with minimum stockholding levels similar to the status quo, would not improve New Zealand's fuel supply resilience, but it would prevent deterioration of fuel security over time. It would have minimal impact on costs, as fuel companies are not expected to invest in additional fuel storage capacity.

Option 2, with minimum stockholding levels similar to those to be implemented in Australia, would improve New Zealand's fuel supply resilience, particularly more resilience for diesel, the most critical fuel for freight. This option would allow New Zealand to reduce impacts on fuel supplies in scenarios where fuel imports cannot enter the country for up to a month. Option 2 could require modest investments in fuel storage, and a conservative estimate of the additional onshore fuel storage costs is approximately $22 million a year. The increase in onshore fuel storage costs will be offset slightly by savings in oil ticket costs of less than $1 million a year. Assuming the changes in onshore fuel storage costs and oil ticket costs are fully passed through to consumers, this would translate to price increases of roughly 0.2 cents per litre (c/L) for petrol, 0.4 c/L for diesel and 0.2c/L for jet fuel.

Option 3, with minimum stockholding levels double that of current levels, would improve New Zealand's fuel supply resilience more than options 1 and 2. Under option 3, fuel demand restraint measures would not need to be implemented should fuel imports be disrupted for up to two months. However, since the minimum stockholding level would double the current level, significant investments in fuel storage would be required. A conservative estimate of the additional onshore

fuel storage costs is approximately $80 million a year. The increase in onshore fuel storage costs will be offset partly by savings in oil ticket costs of approximately $3 million a year. Assuming the changes in onshore fuel storage costs and oil ticket costs are fully passed through to consumers, this would translate to price increases of roughly 0.9 cents per litre (c/L) for petrol, 0.9 c/L for diesel and 1.0c/L for jet fuel. In that sense, option 3 would create a heavier cost burden than options 1 and 2. As with option 2, the minimum diesel stockholding could be raised further (above 40 days) to increase diesel supply security relative to the security of other fuels (whose stockholding could be less than 40 days).

Option 4, with minimum stockholding levels similar to those implemented in European Union member countries would improve New Zealand's fuel supply resilience to longer duration import disruptions, but at an even higher cost of onshore fuel storage capacity – conservatively estimated to be $168 million a year. The increase in onshore fuel storage costs will be offset partly by savings in oil ticket costs of approximately $12 million a year. Assuming the changes in onshore fuel storage costs and oil ticket costs are fully passed through to consumers, this would translate to price increases of roughly 1.8 cents per litre (c/L) for petrol, 1.8 c/L for diesel and 1.9c/L for jet fuel. Again, as with option 2, the minimum diesel stockholding could be raised further (above 60 days) to increase diesel supply security relative to the security of other fuels (whose stockholding could be less than 60 days). Note that in the options above, increasing onshore stock levels would generally reduce the level of offshore reserve stocks procured by the Government. We have not considered options to hold total fuel stocks, onshore and offshore, above the IEA requirement of 90 days of net import demand.

Consultation questions

- Do you agree that the minimum onshore fuel stockholding level should be above the current level?
- Which option for minimum onshore stockholding level do you consider to be the best? Why do you choose that option?

Achieving the target level of onshore stocks

Having considered options for the level of onshore stockholding, we now consider options for how to achieve the chosen level. For the purposes of assessment, we don't assume any particular stockholding level, but we note that some options may be more suited to higher stockholding levels than lower levels.

The options for achieving a target level of onshore fuel stocks, which are not necessarily mutually exclusive, are as follows:

- Government procuring stock or tickets for onshore fuel stocks (if available)
- requiring fuel wholesale suppliers to meet a minimum onshore fuel stockholding level

- establishing a stockholding agency for managing the minimum stockholding obligations of fuel industry participants and the Government.

These options are common fuel stockholding policies adopted by other countries. A summary of other countries' policies is provided in Appendix 1.

As fuel stocks must be turned over regularly to meet fuel quality requirements, any reserve stocks held (whichever option) must be integrated into the commercial supply chain in some way.

Option 1: Government procuring onshore stock or tickets

The Government already invites tenders annually from companies in New Zealand to hold onshore reserve stocks (as well as also inviting tenders from overseas companies to hold offshore reserve stocks). Given that onshore stocks have greater value in terms of domestic fuel security, any tendered onshore stocks are given more weight in the tender evaluation.

Under this option, subject to receiving suitably priced tenders, the Government would select tendered onshore stocks up to the desired total level of onshore stockholding, with any remaining volume required to meet the 90-day IEA obligation selected from offshore tenders.

However, the Government's ability to meet the desired level of onshore reserve stockholding will be dependent on fuel companies submitting reasonably priced tenders. Key determinants will be their available storage capacity and the cost of any additional storage capacity required.

Option 2: Minimum stockholding obligations on fuel wholesale suppliers

Under this option, all fuel wholesale suppliers would be required to hold a minimum level of fuel stocks in New Zealand. This requirement would be suspended when the Government or the Minister with delegated authority is satisfied that a fuel supply disruption presents a material threat of fuel shortage. The minimum stockholding level for each supplier would be based on its share of the fuel wholesale markets, and the target level of onshore fuel stocks set by the Government. The fuel wholesale suppliers would be required to submit monthly returns on fuel stock to the Government.

The fuel wholesale markets, relevant for this option, include markets for all engine fuels, whether fossil fuels or biofuels.

The minimum stockholding obligations on fuel companies in countries where it is implemented are usually tradeable between the obligated companies. The trading mechanisms is intended to allow maintaining the minimum total stock level at least overall cost to the industry and fuel consumers.

Minimum stockholding obligations can also be specified separately for each type of fuel (diesel, petrol, jet fuel) and potentially for different locations. For example, the Australian Government will implement a higher minimum stockholding level for diesel than for petrol and jet fuel—the target level for petrol and jet fuel will be 24 of days of cover (based on average daily fuel consumption in

2018 and 2019) from mid-2022, while the target level for diesel, once finalised after consultation, is expected to be about 28 days of cover from mid-2024.[16]

The Government would be responsible for the relevant compliance, enforcement and monitoring activities. The Government would continue to purchase oil tickets to bridge the difference between the onshore stock and the stock level required to meet the IEA 90-day reserve stock requirement.

Option 3: Stockholding agency

The Government or industry could establish a stockholding agency for managing the compliance, enforcement and monitoring activities associated with the minimum stockholding obligations on the fuel wholesale suppliers. This stockholding agency could have various levels of government and industry involvement, and could take one of the following forms:

a. a government agency with no active participation from the fuel industry

b. an agency with cooperation arrangements between government and the fuel industry

c. an organisation sponsored and funded by the fuel industry.[17]

If the Government runs or co-funds the stockholding agency, we envisage that the agency would:

- manage the compliance, enforcement and monitoring activities associated with the minimum stockholding obligations on the fuel wholesale suppliers
- take over the responsibility for managing compliance with New Zealand's IEA obligations, including procurement of oil tickets
- take on a role in managing responses to fuel disruptions and coordinating the relevant contingency planning and emergency exercises
- develop or manage other fuel resilience mitigation measures, such as the temporary mobile fuel truck loading facilities discussed in Hale & Twomey (2020).

Subject to funding availability, the stockholding agency could also potentially invest in fuel storage and distribution facilities.

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[16] Parliament of Australia, *Fuel Security Bill 2021: Explanatory Memoranda,* ***https://parlinfo.aph.gov.au/parlInfo/download/legislation/ems/r6716_ems_e2da35cc-16b8-4c15-8463-a24810555796/upload_pdf/JC002307.pdf;fileType=application%2Fpdf***

[17] There is a precedent in the gas sector. In the gas sector, the Critical Contingency Operator is established by regulation to provide certain services year-round, and others in an emergency. While these services do not include the storage of gas, they do include maintaining a risk register, communications system and instigating exercises to test preparedness. During an emergency, the Critical Contingency Operator is obliged to monitor line pressures and seek supplies if required. In the fuel sector, a similar type of organisation could be set up by legislation. Its functions could cover both responsibilities similar to that of a Critical Contingency Operator, and responsibilities relating to fuel stockholding.

Assessment of options

At this stage our preference is to impose a minimum stockholding obligation on fuel wholesalers, if the desired level of onshore fuel stockholding is greater than the status quo level. While onshore stocks can be procured under the existing tender process, there is no guarantee that sufficient volumes of stocks will be tendered, or tendered at reasonable prices. In other words, the procurement option simply may not provide the desired level of fuel security.

Our assessment of the options is summarised in Table 4 below.

Table 4: Summary of assessment of options for achieving the target level of onshore stocks

Criteria	Option A (Government procurement of onshore reserve stocks)	Option B (Minimum stockholding obligations on fuel wholesale suppliers)	Option C1 (Stockholding agency – government only, with no active participation from the fuel industry)	Option C2 - (Stockholding agency with cooperation arrangements between the Government and the fuel industry)	Option C3 (Stockholding agency – industry only)
Fuel security/resilience	+ (or 0 depending on availability of onshore tickets)	++	++ (assuming government will invest in infrastructure as well)	++	++
Business compliance cost	0	-	0	- (or 0 if industry could potentially become more coordinated in managing fuel stocks and investments in fuel storage)	- (or 0 if industry could potentially become more coordinated in managing fuel stocks and investments in fuel storage)
Administrative efficiency	0	0	-- (assuming weaker integration with commercial fuel supply network and investment plans)	0 (assuming good coordination between government and the fuel industry)	-(potential competition issues and need for oversight)
Overall assessment	+ (or 0 depending on availability of onshore tickets)	+	0	+	0

Note: ++ denotes much better than the status quo, + better than the status quo, 0 similar to the status quo, -worse than the status quo, and -- much worse than the status quo.

Option A (Government procurement of tickets for onshore stocks) may not be an effective option, as it would contribute to building onshore stocks only if the Government manages to procure tickets from New Zealand fuel industry participants. Furthermore, it is unclear whether fuel industry participants here have sufficient incentives to invest in building enough storage capacity to be in a position to offer tickets for onshore fuel stocks. Nevertheless, this option does not require legislative change to be implemented, and MBIE is running an oil ticket process targeting domestic fuel industry participants to test this option shortly.

Option B (minimum stockholding obligations on fuel wholesale suppliers) would certainly improve fuel supply resilience, but fuel wholesale suppliers would face compliance costs. The magnitude of their compliance costs will depend on the minimum onshore stockholding level set by the Government. The relevant indicative infrastructure costs for the fuel industry were discussed the section, *What level of onshore stocks should be held?*.

From an administrative efficiency perspective, there could be some extra administrative costs of about $1 million for the Government's monitoring and enforcement activities, building on existing activities relating to IEA compliance. The extra administrative costs mainly come from setting up and maintaining systems for keeping information on compliance with obligations (including data on trade between wholesale suppliers for meeting the obligations), and enforcement actions. On the other hand, the stronger enforcement regime for implementing the minimum stockholding obligation could potentially strengthen fuel wholesale suppliers' incentives to provide quality fuel stock data.

Option C1 (stockholding agency run by the Government only with no active participation from the fuel industry) would not be better than the status quo. Under option 3a, the Government would run the stockholding agency without access to the fuel supply network and commercial insights from the fuel industry, such as the industry's investment plans for fuel terminals. The Government would also have to make its own investments in fuel storage as well. While it would improve fuel supply resilience by ensuring that onshore fuel stocks will meet the target level, it would incur administrative costs. The operational cost of this agency could be in the order of $1.5-2.5 million per year[18], depending on the scope of its responsibilities and the number of staff needed for carrying out these responsibilities. This operational cost does not take into account the cost of government investments in fuel storage facilities. Without the fuel industry's involvement, the extra government administration might not lead to efficient outcomes in terms of fuel storage investments and stock management. Therefore, in terms of administrative efficiency, option C1 is worse than status quo.

Option C2 (Stockholding agency with cooperation arrangements between the Government and the fuel industry) would be better than the status quo. It would ensure that onshore fuel stocks will meet the target level. The cooperation arrangement could range from formal information-sharing arrangements to co-funding arrangements between the Government and the fuel industry. Such arrangements could facilitate identification and assessment of locations for holding additional reserve stocks, taking into account locational fuel security benefits relative to the economies of scale

[18] This is based on the assumption that there will be 6-8 full-time-equivalent (FTE) staff working for the stockholding agency. In Ireland, the National Oil Reserves Agency has six staff members and six board members.

and co-location in existing bulk storage terminals. This could subsequently lead to investments in fuel storage and distribution networks at the right location(s). If the fuel industry co-funds this agency, there would be business compliance costs, but that could be money well spent if the stockholding agency improves coordination between the Government and the fuel industry, as well as coordination between fuel industry participants, in managing fuel stocks and management responses to fuel disruptions.

Option C3 (Stockholding agency run by fuel industry only) might not be better than the status quo overall. Like options B, C1 and C2, it would ensure that onshore fuel stocks will meet the target level. However, there would be extra business compliance costs (such as administrative costs associated with setting up the industry body and the database for sharing fuel stock data), which could be justified if this agency managed to improve coordination between fuel industry participants in managing fuel stocks. However, creation of such an agency could have negative implications for market competition, which would require additional government oversight.

Consultation questions

- Do you agree that any biofuel sales should be counted for the purpose of determining a wholesaler's stockholding obligation and any biofuel stocks be counted for the purposes of meeting a wholesaler's obligation?
- Do you agree that the Government should adapt its oil ticket strategy to procure tickets for onshore fuel stocks if the fuel industry participants in New Zealand offer such tickets?
- Do you agree that fuel wholesale suppliers should be required to meet minimum onshore stockholding level?
- Do you consider that there should be minimum stockholding requirements specific to the type of fuel?
- Do you consider that there should be minimum stockholding requirements that apply to specific locations?
- Do you agree that a stockholding agency should be set up to manage the compliance, enforcement and monitoring activities associated with the minimum stockholding obligations on the fuel wholesale suppliers?
- Do you consider that a stockholding agency (if established) should take over the responsibility for managing compliance with New Zealand's IEA obligations, including procurement of oil tickets?
- Do you consider that a stockholding agency (if established) should take on a role in managing responses to fuel disruptions and coordinating the relevant contingency planning and emergency exercises?
- Do you consider that a stockholding agency (if established) should develop or manage other fuel resilience mitigation measures, such as investments in fuel storage and distribution facilities?
- If a stockholding agency is established, should it be government-funded, industry-funded or co-funded by government and industry? If it is co-funded, what should be the share of government funding?
- Do you agree that the Petroleum or Engine Monitoring Fuel (PEFM) levy should be used to provide government funding for a fuel stockholding agency if it is set up?
- Do you agree that a stockholding agency, if established, would improve coordination between the Government and the fuel industry in managing fuel supply resilience? If so, in what ways?
- In your view, how much resources would be needed for the operation of a stockholding agency if established?
- Are there any other options for meeting the target level of onshore stockholding?

Amending levy formula

Some of the options discussed above (particularly procurement of tickets for onshore fuel stocks and stockholding agency co-funded by government and industry) will require additional government funding. Furthermore, as oil ticket prices fluctuate over time and the volume of oil tickets needed to meet New Zealand's IEA stockholding obligations may change significantly after the refinery's closure, there is a need to review the relevant levy settings for funding the Government's fuel security initiatives.

Status quo

The cost of compliance with the Government's commitment to maintain emergency oil/fuel reserve commitment (holding 90 days of oil/fuel stock) under the International Energy Agreement is recovered from the Petroleum or Engine Monitoring Fuel Levy (PEMFL).

The PEFML is collected on transport fuels (petrol, diesel, ethanol, and biodiesel), and is payable by fuel importers (who pass on the cost to consumers). The levy is used to meet the costs of the following purposes:

- monitoring, compliance and enforcement associated with fuel quality, quantity measurement and safety[19]
- the IEA-related work, namely administration associated with compliance with IEA oil/fuel stockholding obligation, such as procurement of oil tickets, collection of oil and fuel statistics, and reporting to the IEA on petroleum products[20]
- PRFML-funded programmes run by the Energy Efficiency and Conservation Authority (EECA), such as the Low Emission Transport Fund.[21]

Under clause 5 of the Energy (Petrol, Engine Fuel, and Gas) Levy Regulations 2017, the PEFML rate is calculated by summing a fixed rate of 0.5 cents per litre and a variable rate determined annually by the Minister of Energy and Resources. The variable rate component of PEFML is used to cover the EECA-related costs.

The fixed rate component of PEFML is used to cover the costs associated with work on fuel quality, quantity measurement and safety, and the IEA-related costs. At present, $3.1 million per annum of the PEFML (approximately 0.05 cents per litre) are allocated to fuel quality and safety monitoring. The IEA-related cost can fluctuate widely from year to year, ranging from $8.6 million in 2017/18 to $23.1 million in 2019/20.

The Government reviews the fixed rate component reviewed every three years (or earlier where necessary). In 2019, the fixed rate was raised from 0.2 to 0.5 cents per litre because oil ticket prices

[19] The appropriation concerned is Commerce and Consumer Affairs: Trading Standards.
[20] The appropriation concerned is Energy and Resources: Management of IEA Oil Stocks 2020-2024.
[21] The appropriation concerned is Energy and Resources: Energy Efficiency and Conservation.

increased significantly at the time and the PEFML account was forecast to go into deficit. The PEFML account is now in surplus, as oil ticket prices fell in 2020 due to the negative impact of COVID-19 on fuel demand.

The accumulated surplus in the PEFML account was $23 million as at 30 June 2021, and is expected to continue to grow if the Government holds no, or just a small amount, of tickets for domestic fuel stocks.

However, the size of this surplus is uncertain because:

- Oil ticket prices fluctuate, and oil ticket prices have started to rise again in the past few months, as COVID-19-related travel restrictions ease gradually
- The potential fall in commercial oil and fuel stocks following the refinery's closure means that the Government may need to purchase more oil tickets unless the Government implements the proposed minimum stockholding obligation on fuel wholesalers/importers
- The option to purchase tickets for onshore stocks could increase the oil ticket costs, as tickets for onshore stocks could be more expensive than tickets for offshore stocks.

Options assessment criteria

The Government has identified a number of options for changing the PEFM levy settings in view of the potential changes to oil ticket costs following the refinery's closure. These options are assessed against the following criteria:

- Equity between current and future levy payers
- Efficiency, i.e. value for money
- Justifiability, i.e. the costs recovered through the levy should relate to the outcomes achieved through the levy, and cross-subsidisation should be avoided
- Transparency, i.e. the processes for setting and managing fees and levies are transparent.

These criteria reflect the principles identified in the Controller and Auditor-General's *Setting and administering fees and levies for cost recovery: Good practice guide*, August 2021, and Treasury's *Guidelines for Setting Charges in the Public Sector*, April 2017.

Assessment of levy options

We propose to amend the PEFML formula so that it distinguishes the component of managing IEA-related costs. The levy rate for this component will be variable, subject to three-yearly review and the Minister of Energy and Resources' approval.

Our assessment of the options is summarised below.

Table 5: Summary of assessment of levy options

Criteria	Preferred option (Distinguish levy component for IEA cost, with three yearly review)	Option two (Distinguish levy component for IEA, with annual update)	Option three (Update the fixed rate component, with three yearly review)
Equity	+	++	+
Efficiency	+	-	0
Justifiability	+	+	0
Transparency	+	+	0
Overall assessment	Best option	Second best	Third best but still better than status quo

Note: ++ denotes much better than the status quo, + better than the status quo, 0 similar to the status quo, -worse than the status quo

Preferred option: Amending formula to distinguish the component of managing IEA-related costs, with three-yearly review of IEA cost component

Under the preferred option, the formula for the PEFM levy would be as follows:

> **PEFM levy rate (in cents/litre) =**
>
> **fixed rate for monitoring, compliance and enforcement activities associated with fuel quality and safety (0.05 cents/litre) +**
>
> **variable rate for recovering IEA-related costs (in cents/litre) to be determined by the Minister of Energy and Resources and updated once every three years or earlier where necessary +**
>
> **variable rate for recovering EECA cost (in cents/litre)**

There would be a separate variable levy rate for recovering the IEA-related costs, which could include funding a fuel stockholding agency (if established). Details of the formula and process for updating the variable levy rate would be prescribed in the Energy (Petrol, Engine Fuel, and Gas) Levy Regulations. MBIE would consult with levy payers on its proposal for this variable levy rate once every three years (or more frequently where necessary), and its proposal would be based on projections oil ticket costs and other IEA-related costs. The Minister of Energy and Resources would have the delegated authority to determine the final levy rate after MBIE reports back on the consultation. This is the key difference from the status quo, in which Cabinet must agree the change and then amend the levy regulations.

The level of PEFM levy funding for the work associated with fuel quality and safety would remain at a level similar to the status quo, while the process for setting the PEFM levy rate for recovering EECA costs would remain the same. The overall PEFM levy rate (including the fuel monitoring component, EECA component and IEA component) will be gazetted annually.

This preferred option would be better than the status quo from the perspectives of justifiability and transparency, as it would be clearer about how the PEFM levy rate is calculated to recover the IEA-related costs, and how much of the levy funding to allocated to work associated with fuel quality and safety.

This preferred option would also be more administratively efficient than the status quo, as changes to the PEFM levy rate for recovering the IEA-related costs would be determined by the Minister of Energy and Resources without having to seek Cabinet agreement.

Option two: Amending formula to distinguish the component of IEA-related costs, with annual update of IEA cost component

Under option two, the formula for the PEFM levy would be as follows:

> **PEFM levy rate (in cents/litre) =**
>
> **fixed rate for monitoring, compliance and enforcement activities associated with fuel quality and safety (0.05 cents/litre) +**
>
> **variable rate for recovering IEA-related costs (in cents/litre) to be determined by the Minister of Energy and Resources annually +**
>
> **variable rate for recovering EECA cost (in cents/litre)**

The levy rate for recovering the IEA-related costs (which could include the cost of funding a stockholding agency if established) would be adjusted annually in a process similar to how EECA currently sets the variable levy rate for recovering costs for some of its levy-funded programmes. Details of the formula and process for updating the variable levy rate would be prescribed in the Energy (Petrol, Engine Fuel, and Gas) Levy Regulations. This would mean that, each year, MBIE would consult with levy payers on its proposed levy rate, and the Minister of Energy and Resources would determine the final levy rate after MBIE reports back on the consultation.

Option two is better than the status quo in terms of equity, justifiability and transparency. With an annual update process for the levy needed for recovering IEA-related costs, the levy rate would align with the actual IEA-related cost more closely than both the status quo and option one. The linkage between the levy rate and IEA costs would also be more apparent to levy payers.

However, option two would be the most administratively burdensome option, as the levy rate for recovering the IEA costs would have to be consulted on and updated annually rather than three-yearly.

Option three: Updating the fixed rate component to reflect updated projections of IEA-related costs, with three-yearly review of the fixed rate

Under option three, the formula for the PEFM levy would be as follows:

PEFM levy rate (in cents/litre) = fixed rate (currently 0.5 cents/litre but to be updated after decision is made on whether to establish a stockholding agency) + variable rate for EECA cost (in cents/litre)

The fixed rate, which covers both fuel monitoring and IEA-related costs, would be updated, once the Government makes final decision on establishing a stockholding agency. If the Government contributes $1.5-2.5 million per annum for the operation of the stockholding agency (excluding oil ticket costs) through the use of the PEFM levy, 0.02-0.04 cents per litre of the levy would be used for that purpose. Whether this would result in an increase in the fixed rate component of the PEFM levy would depend on future movements of oil ticket costs.

This option would be better than the status quo in the sense that it would better reflect the projected costs of oil tickets and the IEA-related administrative work, thereby improving the equity between current and future levy payers.

From the justifiability and transparency perspective, this option would be similar to the status quo, as the fixed rate under this option would still cover both the costs associated with work on fuel quality, quantity measurement and safety, and the IEA-related costs. In other words, the IEA-related costs would still not be separated out, and levy payers would not be able to see clearly the linkage between the levy rate and the IEA-related costs.

This option would be similar to the status quo from an administrative efficiency perspective, as it follows the same process for updating the PEFM levy rate.

Consultation questions

- Do you agree that the PEFM levy formula should be amended to distinguish the component of managing IEA-related costs (including procurement of tickets for onshore fuel stocks and possibly funding for a stockholding agency in the future)?
- Do you agree that the PEFM levy rate for covering the IEA-related costs should be variable, subject to three-yearly review and the Minister of Energy and Resources' approval? If not, why not?

Implementing minimum stockholding obligations (if required)

This section contains information on the proposed requirements for how fuel suppliers would comply with minimum onshore fuel stockholding obligations assuming the Government chooses that option to achieve a stockholding level above the status quo.

These proposals, which are high level, would support the implementation of the proposed minimum stockholding obligations, and hence the achievement of the desired level of fuel security/resilience. The key criteria that apply to the development of these proposed requirements are compliance costs, and administrative efficiency (i.e. ensuring compliance with the minimum stockholding obligations while keep government administration costs at a minimum level).

Who would have to comply?

It is proposed that fuel wholesale suppliers, as defined in the Fuel Industry Act 2020, would have to comply with the minimum onshore fuel stockholding obligations, including:

- holding onshore fuel stocks at or above the minimum level set by the Government, based on the market share of the fuel wholesale supplier concerned and the desired number of days of cover for meeting New Zealand's fuel demand
- making financial contributions to stockholding agency (if established) at a level set by the Government, based on the market share of the fuel wholesale supplier concerned and the funding required for the operation of the agency
- fulfilling information disclosure requirements, such as filing monthly returns on fuel stocks.

This proposed point of obligation at the level of fuel wholesale suppliers (namely fuel suppliers taking fuels from a refinery or importing them) is similar to the point of obligation for the fuel sector under other policies, such as the Emissions Trading Scheme and the proposed Sustainable Biofuels Mandate. By setting the point of obligation as close to the top of the supply chain as possible, the number of obligated parties would be kept at the minimum, while most if not all of the fuel stocks in New Zealand that feed through the New Zealand fuel markets would be captured. Business compliance burden and government administration costs can therefore be minimised as a result.

The alternative is to require all fuel suppliers, including both fuel wholesalers and fuel resellers. Under this alternative, fuel resellers, particularly small ones, would face disproportionately high compliance costs, considering the relatively small volume of fuel stocks they manage and the limited fuel storage facilities they manage.

Consultation question

- Do you agree that fuel wholesale suppliers be required to meet minimum onshore fuel stockholding obligations? If not, who should ensure that we have sufficient onshore fuel stocks to keep fuel supply resilient?

Monthly reporting

To assess compliance with the minimum fuel stockholding obligations, fuel wholesale suppliers would be required to submit monthly returns to the agency for administering these obligations (MBIE or the stockholding agency). This return would include, at a minimum:

- the wholesale supplier's fuel stock data, and how their onshore stock levels compare with the minimum fuel stockholding level
- notice of any entitlement agreement between fuel suppliers who traded fuel stocks for meeting the minimum fuel stockholding level.

The details of the information to be provided by fuel wholesale suppliers in their monthly returns are expected to be prescribed in regulations, and subject to further consultation. In the meantime, we welcome your feedback on the type of information to be included in monthly returns.

These returns would have to be submitted within two weeks of the end of each month. The regulator would be empowered to obtain any further information that is necessary to administer and assess compliance with the minimum onshore fuel stockholding obligations, and would have the power to require audits of the data provided by fuel wholesale suppliers.

We consider the compliance cost of the monthly returns requirement would not be significant, as fuel wholesale suppliers already provide monthly fuel stock data to MBIE for statistical purposes. The monthly returns requirement is common in other countries implementing minimum fuel stockholding obligations, such as Ireland.

The alternative of requiring less frequent returns on stockholding level (such as quarterly or annual returns) might reduce administrative efficiency, as fuel suppliers may only have the incentive to boost the stock level to meet the minimum required level just before the end of the reporting period—the longer the reporting period, the higher the risk the stockholding level falls below the minimum required level for an extended period.

Consultation questions

- Do you agree that fuel wholesale suppliers should file monthly returns on onshore fuel stockholding? If not, why not?
- Do you have any view on the information disclosure requirements for monthly returns on onshore fuel stockholding, particularly the type of information to be provided and relevant record-keeping requirements?

Trading of obligations

Fuel wholesale suppliers would be able to trade with others to meet the minimum fuel stockholding obligations through entitlement agreements between them. These agreements would record the transfer of the right to count an amount of fuel stocks for the purpose of complying with the minimum stock, and would be signed by both parties.

Fuel suppliers would document the details of their trades in their monthly returns to the regulator. To ensure the integrity of the trades, it would be an offence to sign a false or misleading agreement. This includes entering into more than one agreement for a particular amount of fuel stocks.

The proposed mechanism of trading through entitlement agreements can help minimise compliance costs of fuel wholesale suppliers. If the fuel wholesale supplier concerned considers it less costly to enter into entitlement agreements to meet its minimum onshore fuel stockholding obligations than to hold the actual stocks or pay the penalty for non-compliance, it can choose to enter into these agreements. This flexibility would better enable fuel suppliers to respond to short-term supply disruptions, such as from unforeseen disruptions to import sources.

From the perspective of administrative efficiency, the Government would incur extra administration costs to set up a database for recording these trades, and may need to undertake audits to minimise the risk of double-counting the traded fuel stocks. If the trading volume is small, the administration costs associated with monitoring these trades would be relatively small.

Consultation question

- Do you agree that fuel wholesale suppliers should be allowed to trade with each other to meet the minimum fuel stockholding obligations through entitlement agreements between them? If not, why not?

Penalties for non-compliance with stockholding obligation

To motivate fuel suppliers to comply with compliance with the minimum fuel stockholding obligations, penalties would apply where fuel wholesale suppliers fail to achieve the minimum

stockholding level. The proposed penalties would correspond to the extent and duration of the shortfall, up to a proposed maximum of $1.5 million.

The proposed maximum penalty level is in line with other countries implementing minimum oil/fuel stockholding obligations. For example, the maximum penalty in Norway is approximately $1.6 million[22], while that in Japan is approximately $1.3 million[23]. It is also common for the penalty to correspond to the extent and/or duration of the shortfall in other countries, such as Australia and France. As seen in other countries, this level of penalty provides sufficient level of compliance with the minimum stockholding obligations, and therefore should satisfy the criterion of administrative efficiency. From the perspective of compliance cost, the penalty is proportionate, given that the net profit of some fuel wholesale suppliers in New Zealand is typically in the order of tens of millions of New Zealand dollars.

Consultation question

- Do you think the proposed penalties for non-compliance with minimum stockholding obligations are appropriate? If not, why?

Penalty for providing false or incomplete information

To ensure that the fuel wholesale suppliers provide accurate information on stockholding level, we propose that anyone knowingly providing information that is false or incomplete to satisfy compliance with the minimum fuel stockholding obligations could attract fines of:

- for an individual, a fine not exceeding $100,000 for a person
- for an organisation, a fine not exceeding $500,000.

The proposed maximum penalty levels are the same as those for the recently proposed sustainable biofuels mandate, and not dissimilar to the penalties for offences of a similar nature in other legislation, such as the Financial Markets Conduct Act 2013. We consider this level to be proportionate in view of the nature of the offence and the level of profit of fuel wholesale suppliers. It should achieve the right balance between administrative efficiency and compliance burden.

[22] ***https://lovdata.no/dokument/SF/forskrift/2006-09-01-1019*** and ***https://www.iea.org/articles/norway-s-legislation-on-oil-security***.
[23] Articles 45 and 48, Oil Stockpiling Act 1975, Japan.
http://www.japaneselawtranslation.go.jp/law/detail/?id=3000&vm=02&re=

Consultation question

Do you think the proposed penalties for knowingly providing false or incomplete information are appropriate? If not, why?

Legislative framework

Minimum stockholding obligations would likely require new legislation or amendments to the International Energy Agreement 1976. The legislation would likely specify:

- the main elements of the minimum fuel stockholding obligations, including the minimum stockholding level, and the point of obligation
- the obligation to monitor and report on fuel stock data and performance against minimum stockholding level
- the penalty regime
- the ability for producers to trade fuel stocks between each other to meet the minimum stockholding obligations
- functions of the fuel stockholding agency (if this option is pursued).

Supporting regulations may also be needed to prescribe more detailed requirements, including the precise method for measuring minimum stock levels. These regulations could also specify the details of information that fuel wholesale suppliers must provide for monitoring purposes, e.g. where the fuel stocks are held or sourced.

Under section 6 of the International Energy Agreement Act 1976, the Minister of Energy and Resources may give a direction to require fuel industry participants to maintain, or to assist towards maintaining, reserve supplies of petroleum and engine in New Zealand at a level required by the International Energy Agreement. However, this power may not be suitable for implementing minimum stockholding obligations. For example, the ministerial power of direction is specific to IEA compliance and cannot be used to specify the locations of fuel storage. Also, the maximum penalties for non-compliance (up to $10,000) may be too low to incentivise compliance by fuel wholesale suppliers.

The proposed change to the formula for calculating the Petroleum or Engine Fuel Monitoring Levy would require amendments to the Energy (Petrol, Engine Fuel, and Gas) Levy Regulations 2017.

Review after five years

We propose that minimum fuel stockholding obligations be reviewed after five years of operation.

This review would include consideration of whether the minimum stockholding level remains appropriate in light of factors, such as fuel demand in New Zealand, fuel mix for transport fleet, international fuel supply chain, and domestic fuel production capacity. The penalty levels would also be reviewed to ensure that they continue to provide sufficient incentives to encourage compliance.

Information on the rate of compliance with the minimum stockholding obligations, occurrences of fuel supply disruptions and any implementation issues (e.g. those relating to integrity of record-keeping and administrative complexity) will be collected to inform the review.

Appendix 1: International stockholding policies[24]

IEA member countries stock holding policies

IEA Member Country	Approach to obligated security stocks (Government, Agency, Obligated Industry)[25]
Canada *net exporter*	No obligation on industry or government
Mexico *net exporter*	**Obligated Industry** The IEA lists Mexico in this category but provides no additional information.
Austria	**Obligated Industry and Agency (ELG)** All industry obligations are assumed by privately owned agency ELG. Quantity held is 25 percent of their prior year's imports of petroleum, biofuels and feedstocks used directly to produce biofuels in country, equal to about 89 days consumption cover. No bilaterals.
Belgium	**Agency (APETRA**) APETRA is solely responsible for meeting Belgium's stock holding obligations with costs met by obligated oil companies. Quantity held is 90 days of their prior year's daily average net oil imports, or 61 days of prior year daily average inland use.
Czech Republic	**Government (ASMR)** Government owned ASMR solely holds emergency stocks. Quantity held is 90 days of the reference year's daily net oil imports, held in country (no bilaterals).
Denmark *net exporter*	**Obligated Industry and Agency (FDO)** Obligated industry are importers or producers of petroleum in Denmark. Minimum quantity held is 24 days of oil consumption while FDO holds 67 days.
Estonia	**Agency (OSPA)** Government-owned OSPA is financed by the government and obligated companies. Quality held is 90 days of their prior year's daily net oil imports, or 61 days of prior year daily average inland consumption of energy products.
Finland	**Obligated Industry and Agency (NESA)** Obligated companies are importers of petroleum. Minimum quality held is two months of average net imports in the previous year while NESA covers domestic demand for an average of five months.

[24] This appendix is copied from Hale & Twomey (2020)

[25] The IEA distinguishes three types of obligated stockholding ownership arrangements being Government, Agency or Obligated Industry. Countries may use one category or a combination of stock categories. ***https://www.iea.org/areas-of-work/ensuring-energy-security/oil-security***

IEA Member Country	Approach to obligated security stocks (Government, Agency, Obligated Industry)[25]
France	**Obligated Industry and Agency (SAGESS)** Obligated companies are warehouses and oil product related operations that attract domestic value added tax or deliver a petroleum product to aircrafts in France. Quantity held is one quarter of the prior year's net petroleum imports. Part of this is stockholding is delegated to the CPSSP company and is managed by SAGESS.
Germany	**Agency (EVB)** All obligated companies are members of the public corporation EBV which is solely responsible for managing Germany's reserves. Quality held is 90 days of daily net imports averaged across the previous three calendar years.
Greece	**Obligated Industry** Obligated companies hold stocks equal to at the least to 90 days of the prior year's average daily net imports.
Hungary	**Agency (HUSA)** Obligated companies distribute or import petroleum products and are members of and fund HUSA. Quality is 90 days of the prior year's average daily net imports.
Ireland	**Agency (NORA)** Obligated companies fund NORA via an industry levy. Companies already holding 55 days of their prior year's imports may apply for an exemption. Quantity held mirrors international obligations.
Italy	**Obligated Industry and Agency (OCSIT)** Quantity held is greater of the 90 day of the prior year's average daily net imports, or 61 days of domestic consumption in the previous year.
Korea	**Government and Obligated Industry** Obligated industry obligated to maintain stocks. KNOC government company has management and oversight. No bilateral stocks. (Refineries, specified distributors, and importers, are obliged to hold from 40 days to 60 days of their daily import, sale, or refined production, based on the previous 12 months)
Japan	**Government and Obligated Industry** Government stocks held by JOGMEC. Oil stockpiling targets are fixed on a five-year basis and industry obligated private emergency stocks should equate to 70-90 days of Japanese oil consumption in the previous year (currently set at 70 days). No bilateral stocks.
Luxembourg	**Obligated Industry** Obligated companies hold stocks at least to 93 days of the prior year's net average daily import. If the 61 days of average daily domestic consumption of the country exceed 93 days of average daily domestic imports, then the minister fixes an additional storage obligation for each importer.
Netherlands	**Obligated Industry and Agency (COVA)** Obligated companies hold 20 percent and COVA the remaining 80 percent. Quantity held is 90 days of their prior year's daily average net oil imports, or 61 days of prior year daily average inland use. No bilaterals.

IEA Member Country	Approach to obligated security stocks (Government, Agency, Obligated Industry)[25]
Norway *net exporter*	**Obligated Industry** Importers or producers of petroleum products or biofuels obligated to hold stocks to cover at least 20 days of consumption. No bilaterals.
Poland	**Government (MRA) and Obligated Industry** Obligated companies hold 53 days of the prior year's average daily production or net imports. The balance is held by government agency MRA which is financed mainly by obligated oil producers and traders. No bilaterals.
Portugal	**Obligated Industry and Agency (ENMC)** Obliged companies stock the equivalent of 60 days of the prior year's average daily net imports. The remaining 30 days is held by ENMC.
Slovak Republic	**Agency (EOSA)** Quantity is the higher of 90 days of the prior year's average daily net imports or the 61-day average daily inland consumption, with 50 percent held as oil.
Spain	**Obligated Industry and Agency (CORES)** Quantity is 92 days of sales or consumption in the previous year. Within this minimum, industry holds 50 days with the remaining 42 days held by CORES.
Sweden	**Obligated Industry** Obligated companies and agency hold the higher amount of either 90 days of the prior year's average daily net imports or to 61 days of average daily consumption. No bilaterals.
Switzerland	**Obligated Industry** Obligated industry hold the compulsory stocks commingled with commercial stocks. The target volumes are not written into law. Currently, they are 4.5 months for petrol, diesel, and fuel oil and 3 months for kerosene. No bilaterals.
Turkey	**Obligated Industry** Target cover of 90 days of prior year's average daily net imports. Within this, oil refineries and distributers must hold emergency stocks corresponding to at least 20 days of supplied product in the previous year. No bilateral stocks.
UK	**Obligated Industry** Under EU legislation (which are fully enforceable at the time of writing), the UK is required to hold 67.5 days' domestic net consumption (61 days plus 10 per cent). The UK government directs substantial suppliers to hold stocks to meet its international stocking obligation, of which 22 days must be finished products.
USA	**Government** The Strategic Petroleum Reserve (SPR) is government owned and the operation, development, and maintenance of the SPR is supervised by the US Secretary of Energy for the storage of up to 1 billion barrels of petroleum (actual maximum capacity of the SPR currently stands at 714 million barrels). SPR stockholding is currently equal to 1,357 days of the prior year's average daily net imports. Northeast Gasoline Supply Reserve (NGSR), which consists of 1 million barrels of gasoline in the Northeast United States are counted as part of the SPR. DOE also holds 1 million barrels of petroleum distillate in the NEHHOR, which operates under separate statutory authority and which are not counted as part of the SPR.

IEA association countries stock holding policies

IEA Association Country	Security stocks approach
Brazil	No public information found. Assume no target or obligation
China	**Industry and government** Government is building and filling SPR since 2001 and expects storage capacity to reach 500 mb by 2020 (274mb June 2017 confirmed by China NBS). Also "encourages" (IEA wording) domestic oil companies to increase their commercial reserves to enhance resilience. In 2015, the NDRC started to oblige refineries to hold at least 15 days of crude oil reserves based on daily processing capacity.
India	**Government** India does not place a minimum stockholding obligation on its industry. India set up the Indian Strategic Petroleum Reserves (SPR), a wholly owned subsidiary of the Oil Industry Development Board under the Ministry of Petroleum and Natural Gas in 2004. The entire SPR volumes are expected to be in the form of crude oil. The construction of three sites was completed by 2018 and the caverns are now filling. India is exploring creation of an additional 6.5 Mt of storage capacity (around 50 mb) in rock caverns and associated facilities.
Indonesia	**Industry (NOC)** Indonesia relies upon operational stocks held by the national oil company, Pertamina, amounting to 21-24 days of consumption in 2019. (source IEA)
Morocco	**Obligated Industry** Stockholding obligations placed on oil distributers and importers; since 2014 they have to be equivalent to two months (60 days) of oil product sales. The government also imposed stockholding obligations on refiners, equivalent to one month (30 days) of their crude oil needs. Since the closure in 2015 of its only operating oil refinery, Samir, Morocco has had to import all its refined product requirements. The refinery's closure also resulted in the loss of the use of over 60% of the country's storage capacity; however, the oil storage infrastructure is still intact. The government has decided to take steps to ensure that it has sufficient oil stocks for security of supply purposes by reviewing compliance with the current stockholding regime, with a view to either confirming and enforcing existing stockholding obligations, which are currently not being met, or by putting in place a new emergency stockholding structure.
Singapore	**Industry (oil-fired power generation only**) There is no government oil stockpile in Singapore since the obligatory crude-oil stockpile was abolished in 1983 although the Singapore National Oil Company (established in 1979) maintained crude-oil stockpiling until then. It is required, however, that power-generating companies hold fuel oil stocks equal to 90 days of use as backup for oil-fired power plants.
South Africa	**Government (SFF)** The oil stocks are held and managed by the Strategic Fuel Fund Association (SFF), a non-profit state-owned entity. The SFF is wholly owned by another SOE, the Central Energy Fund (CEF). Both report to the Minister of Energy, the

IEA Association Country	Security stocks approach
	shareholder on behalf of the government. The SFF manages the reserves and rents out storage space in its tanks, which covers the costs of managing the reserves. In a major scandal, the SFF fraudulently sold 10 million barrels of reserves for $280 million in 2015 and applied to invalidate the sale in 2018.
Thailand	**Obligated Industry** The Fuel Trade Act (2000) places mandatory stockholding obligations on all Thai refiners, retailers and importers in the private sector that have operations greater than 100 Kt per year. These operators have to stockpile 6% of their yearly sales of crude oil and 10% of oil products, which should be at least equivalent to 25 days of consumption (reduced from 43 days in May 2015).

Other APEC and ASEAN countries

Other APEC & ASEAN	Security Stock Approach
Chile	**Obligated Industry** Chile imposes a mandatory minimum stockholding requirement on producers and importers (if the imports are for their own consumption) of petroleum-derived liquid fuels. They must hold inventory levels that equal 25 days of average sales (or average imports) of the previous six months
Peru	**Obligated Industry** Obligatory 15-day inventory (TBC)
Chinese Taipei	Obligated Industry and Government Refiners and importers must hold 60 days of sales volumes as stockholdings. The government uses the petroleum fund to finance the storage of oil and also stockpiles 30 days of oil consumption.
Malaysia	**No Obligation** No mandatory requirement for government or private oil stocks.
The Philippines	**Obligated Industry** Since 2003 the requirement for industry is to hold 30 days of in-country stocks of crude/petroleum products for refiners, 15 days of in-country stocks of finished products for importers, 7 days for bunkering companies, and 7 days for distributors of LPG.
Vietnam	**Obligated Industry** Oil companies are obliged to hold stocks equal to 30 days of net imports.
Brunei Darussalam *Net exporter*	**Industry** Oil companies are requested to maintain a stockholding of 31 days
Cambodia	**Obligated Industry** Oil companies obligated to hold stocks equal to 30 days of domestic use.
Laos	**Obligated Industry** Oil companies obligated to hold at least 15 days of oil imports.
Russia	**Government**

Other APEC & ASEAN	Security Stock Approach
Net exporter	As of 2011, Russia is accumulating strategic reserves of refined oil products to be held by Rosneftegaz, a state-owned company. The reserves will be held at commercial refineries, Transneft facilities and state reserve facilities.